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A Community-University Partnership to Improve Access to Fresh Produce among Homebound Seniors

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ABSTRACT

Accessing fresh produce is often difficult for homebound seniors, leading to under-consumption and increased risk of chronic disease. Current Meals on Wheels (MOW) programs do not include fresh produce delivery. A MOW agency collaborated with a large non-profit university to design and evaluate the impact of a monthly produce delivery program to homebound seniors. The produce delivery program was systematically designed based on the constructs of the Health Belief Model. Quantitative and qualitative data was collected. The results of the monthly delivery of fresh produce to homebound seniors demonstrated an increased produce intake and increased perceived health value of fruits and vegetables. A processes evaluation was conducted with results used to make immediate improvement in program methods. The university-community partnership strengthened program development and provided expertise for program evaluation. The produce delivery program was an effective way of decreasing barriers to accessing produce and increasing consumption.

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BACKGROUND

Diets that are high in fruits and vegetables lower an individual's risk of chronic disease and contribute to healthy aging. The rising senior population is at an increased risk of developing chronic disease and age related health issues such as cognitive decline and frailty. Research suggests that the risk of these diseases can be decreased with adequate consumption of fruits and vegetables (Nicklett & Kadell, 2013). It is suggested that adults over 65 consume 2.5 cups of both fruits and vegetables per day to prevent disease; yet, less than half of older adults eat the recommended five servings of fruit and vegetables per day (USDA, 2015; USDA, 2007). There are many barriers faced by seniors to adequate consumption of produce. Up to 9% of older adults are living in impoverished households and spend up to 29% of their household income on out of pocket health expenditures leaving less income for food (Johnson et al., 2008). Seniors also lack access to fruits and vegetables, which contributes to their under-consumption. Nearly 3 million seniors are homebound with functional limitations preventing them from shopping for groceries (Qiu et al., 2011). Efforts have been made to help combat these barriers. Federal programs such as the Older Americans Nutrition Program (OANP) have been successful in providing foods rich in vital nutrients to homebound

seniors through meal delivery services including Meals on Wheels (MOW) (Wellman et al., 2005). However, recent research has found that 83% of seniors who applied for Meals on Wheels are unable to shop for groceries, and that fruits and vegetables make up only 12% of non-MOW calories in the home (Byrd-Bredbenner, McWilliams, Senger-Mersich, Cuite, & Hallman, 2015). Further programs are needed to help seniors overcome the barriers to fruit and vegetable consumption to improve access and increase their overall intake.

Perceptions of barriers and benefits of the targeted health behavior can directly influence behavior change. The Health Belief Model (HBM), a value expectancy theory, explains how a person's beliefs and perceptions of a health behavior directly influence their likelihood of adopting it (Nnakwe, 2013). The Health Belief Model includes beliefs about the benefits, barriers, susceptibility, and severity of a health issue of the target population to determine why they are or are not taking part in a health behavior (Nnakwe, 2013). Furthermore, it aims to measure the population's confidence in performing the behavior even when the conditions to do so are not ideal (Nnakwe, 2013).

A needs assessment of program recipients conducted by a MOW program in southwest, central Florida identified a lack of access to fresh produce

and a need for delivery of fresh produce. The MOW program collaborated with a College of Public Health at the area university to design a produce-delivering program, Produce on Wheels (POW!), for homebound seniors. With the goal of improving the overall health of the target population, the program was designed to address the HBM constructs. The university partner also evaluated the effectiveness of the POW! program. This paper describes the evaluation of the produce delivery program to homebound seniors.

METHODS

A pretest-posttest, descriptive study was conducted at Meals on Wheels of Tampa. A convenience sampling of MOW recipients participating in the POW! program was utilized. Due to privacy issues raised by the non-profit organization, participant demographics were not collected – only program demographics. The recipient population is comprised of 23% African-American, 19% Hispanic, 58% Caucasian. The average age of the recipients is 74 years. Overall, 66% of the recipients are female and 34% are male. Approval for the study was obtained from the University Institutional Review Board.

The research team contacted all clients participating in the POW! program by phone to describe the study and invite clients to be a part of the study. Verbal consent was obtained from those who agreed. The pre-test survey, which consisted of questions pertaining to access, importance, and intake, was administered over the phone by a graduate student trained in dietary recalls and survey methods. The survey took approximately 10 minutes to complete. After three months of POW! deliveries, clients received a second call to collect post-test data. Clients were asked the same questions on access, importance, and intake.

To evaluate the impact of the program on fruit and vegetable intake, the participants were asked “how many servings of fruit do you consume on average each day?” and “how many servings of vegetables do you consume on average each day?” To evaluate the program’s impact on access to fresh fruits and vegetables, the participants were asked “how is your access to fresh fruits and vegetables?” on a 5-point Likert scale with responses ranging from 1 representing “very difficult” to 5 representing “very easy.” To evaluate the impact of the program on value of fruits and vegetables to health, participants were asked “how important do you feel fresh fruits and vegetables are to your health?” on a 5-point Likert scale with responses ranging from 1 representing “not at all important” to 5 representing “extremely important.”

A process evaluation was completed after the first monthly delivery of produce. A member of the research team conducted in-home interviews with

recipients of the POW! program. Interviewees were randomly selected from program participants. Verbal consent was obtained prior to the start of the interview. To assess overall usability of the program, participants were asked to describe the general quality of the program, relevance of the educational materials, and the overall benefits of the program. Participants were also asked to give general thoughts and suggestions to further improve the program.

RESULTS

Quantitative Results

Surveys were completed by 80 recipients (12% response rate) pre-program and 122 recipients (18% response rate) post-program. A paired data sample was unavailable; therefore, we used a between-subjects analysis to examine the differences between pre- and post-test scores on each outcome measure.

Table 1 shows the pre- and post-intervention results. The pre-intervention group consumed an average of 1.09 servings of fruit and 1.23 servings of vegetables prior to the start of the program. After three months of receiving fresh produce from the POW! program, recipient’s intake significantly increased to 1.91 servings of fruit and 1.79 servings of vegetables.

Recipients were asked to rate their access to fresh produce. The pre-intervention group’s accessibility was 2.46; the post-intervention group’s accessibility significantly increased to 4.12. The recipients were also asked to rate the value of fresh fruits and vegetables to health. The pre-intervention group’s perceived value was 4.40 while the post-intervention group’s value significantly increased to 4.66.

Qualitative Results

A process evaluation was conducted to assess usability of the program to the recipients. The research team conducted 23 interviews. Interviews were conducted at the recipients’ home. Common themes were identified based on the responses. The process evaluation revealed that the educational material provided with the produce was helpful. The recipients’ view of the overall quality of the program was positive. The produce was consistently described as fresh, high quality, and adequate in amount. Preferences for certain kinds of produce were also identified as a consistent theme and was related to the ease of preparation and consumption. Common themes of benefits of the program included increased access to produce and increased health.

Conclusion

This study evaluated the effectiveness of one of the first produce delivery programs for homebound seniors in the country. The study findings confirm that the program was effective in increasing the fruit and vegetable intake of participants. Participants

averaged an increase of almost 1 serving of fruit and ½ serving of vegetables each day. Given the “5-a-day” recommendation of fruit and vegetable intake, our participants increased their intake by 30% toward the recommendation.² The increase in fruit and vegetable intake was not only statistically significant but clinically significant as well.

Table 1
Pre- and Post-Intervention Results

	Pre- inter- vention (N = 80)	Post- inter- vention (N = 122)	F	p	Partial eta ²
Fruit Intake	1.09 (.874)	1.91 (1.157)	29.38	.0005	.128
Vegetable Intake	1.23 (.795)	1.79 (.855)	22.04	.0005	.099
Access to Produce	2.46 (1.368)	4.12 (.809)	117.3 8	.0005	.370
Value of Produce	4.40 (.648)	4.66 (.491)	10.78	.001	.051

The program was developed based on the HBM. The program specifically addressed barriers to fruit and vegetable intake by increasing accessibility and providing recipes and handling tips. Further, the program addressed perceived benefits through education materials on nutrition and health. This systematic program design grounded in theory resulted in substantive changes in health behaviors.

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Based on the process evaluation, adjustments were made in the types of produce delivered and educational material design to improve the effectiveness of the program. Our experience reinforced the value of process evaluation as population characteristics and preferences may differ among seniors by geographic location.

This project was not without limitations that may have influenced the results. The lack of paired data samples did not allow for analysis of changes within-subjects. Further, a convenience sample was utilized and participant demographics were not obtained – only overall program demographics. Finally, the responses could have been affected by factors such as social desirability. Overall this pilot study was an important first step in demonstrating the benefits of university-community partnerships in effectively increasing the fruit and vegetable intake of homebound seniors and disabled.

Practice Implications

- Delivery of fresh produce to homebound seniors is an effective way of increasing fruit and vegetable intake.
- Application of theoretical models to practice can significantly improve program outcomes
- Process evaluations are critical to improve program effectiveness.
- Partnerships between community programs and universities increase the capacity to serve and strengthen the community.

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